## **CLAIMS**

## What is claimed is:

- 1 1. A satellite life extension spacecraft, comprising:
- a mechanical implement adapted for connection to a parent spacecraft;
- a thruster pod extension device;
- a first thruster pod and a second thruster pod attached to the thruster pod
- 5 extension device, the first pod positioned relative to the second pod such that a center of
- 6 mass of a combined spacecraft comprising the satellite life extension spacecraft and the
- 7 parent spacecraft can be determined relative to the first and second pod.
- 1 2. The spacecraft of claim 1, wherein the first and second thruster pods comprise a
- 2 thruster pivotally affixed to the thruster pod and adapted for rotation about a rotational
- 3 axis.
- 1 3. The spacecraft of claim 2, further comprising logic configured to dynamically
- 2 calculate the center of mass of the parent/child spacecraft when the mechanical
- 3 implement is coupled to the satellite.
- 1 4. The spacecraft of claim 3, wherein the logic is further configured to calculate a
- 2 first angle of rotation about the rotational axis corresponding to the center of mass
- 3 calculated.

- 1 5. The spacecraft of claim 4, wherein the logic is further configured to detect a
- 2 change in the center of mass and calculate a second angle of rotation about the rotational
- 3 axis corresponding to the change in the center of mass.
- 1 6. The spacecraft of claim 1, wherein the thruster pod comprises at least one second
- 2 thruster, the second thruster rigidly affixed to the thruster pod.

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- 2 7. A satellite positioning method, the method comprising the steps of:
- 3 calculating a center of mass of a parent/child spacecraft;
- 4 calculating an angle of rotation of a thruster pod about a gimbal related to the
- 5 center of mass calculated; and
- 6 changing the angle or rotation of the thruster to reflect a change in the center of
- 7 mass.
- 1 8. The method of claim 8, further comprising the steps of:
- 2 calculating a first firing direction and a first magnitude of force for a fixed
- 3 thruster; and
- 4 calculating a second firing direction and a second magnitude of force for a
- 5 gimbaled thruster.
- 1 9. The method of claim 8, wherein calculating the first firing direction and
- 2 calculating the second firing direction are based upon the center of gravity calculated.